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BY FAX (8 pages)

Turin, September 16, 2005

Our Case E-2471/04

Re: International Application No. PCT/EP2004/052981  
in the name of G.D SOCIETA' PER AZIONI et al.

Dear Sirs,

According to Art. 34 and Rule 66 of the Patent Cooperation Treaty, we submit an amendment of the International Application in object; please find enclosed herewith a copy of new pages 1-3 and 12-15 replacing the corresponding original pages 1-3 and 12-15.

The description (pages 1-3) has been amend for identifying the most relevant prior art (document D1).

Independent claim 1 has been amended (see for reference page 7, lines 15-19 of the application as filed) to improve the clarity and to better define the differences with the closest prior art (D1). In particular, D1 does not disclose two succession of stop members, which are located on opposite sides of the reference plane and intercalated.

Yours faithfully,

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## CENTRING DRUM FOR FILTER ASSEMBLY MACHINES

### TECHNICAL FIELD

5       The present invention relates to a centring drum for filter assembly machines.

### BACKGROUND ART

On filter assembly machines, filter portions, of a length equal to that of an even number of filters, normally four or six, are fed into a hopper, from which they are withdrawn by an extracting drum having a number of peripheral seats equally spaced about the extracting drum and for receiving and retaining respective filter portions by suction. Each of the filter portions is fed by the extracting drum through a cutting station where it is cut into a number of shorter filter portions defining respective double filters, i.e. twice the length of a cigarette filter, positioned coaxially inside the respective seat.

20       The double filters in each number are then transferred to an offsetting drum, which offsets them angularly with respect to one another to form, along its periphery, a number of rows of double filters equal to the number of double filters formed from each filter portion. The double filters in each row are equally spaced with a first spacing, which is equal for all the rows, about the axis of the offsetting drum, and each double filter in each row is offset, with respect to a corresponding double filter in an adjacent row, by a

second spacing equal to a submultiple of the first spacing.

The offset double filters are then fed to a centring drum, which shuffles the rows, by shifting them laterally, into a single row in which the double filters are spaced with said second spacing. This single row is then fed in known manner to a feed line supplying cigarette portions, to form double cigarettes.

On known centring drums, the rows are normally shuffled by means of fixed external converging plates, which gradually engage the rows of double filters, and slide the double filters axially along the relative seats into alignment with one another and into a central position normally centred with respect to a reference plane crosswise to the rotation axis of the centring drum.

Though perfectly functional, known centring drums of the type described above have drawbacks when making any change in format, which normally involves changing and/or dismantling and reassembling said plates, thus resulting in relatively prolonged downtime.

WO03043449A1 discloses a filter placement machine comprising a main drum and a number of additional assigned drums; the elements of the filter cigarettes, namely the tobacco stock or partial stocks, filter pieces, cigarette units, and the filter cigarettes manufactured from these elements are conveyed through the main drum with the exception that partial stocks with an inserted filter piece that are displaced at a

distance from one another are conveyed out of the main drum in order to apply a covering paper and are joined to one another whereupon these now one-piece cigarette units are fed back to the main drum.

5        DISCLOSURE OF INVENTION

It is an object of the present invention to provide an improved centring drum designed to eliminate the aforementioned drawback.

According to the present invention, there is  
10 provided a centring drum as recited in the attached Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

A non-limiting embodiment of the present invention will be described by way of example with reference to  
15 the accompanying drawings, in which:

Figure 1 shows a schematic view in perspective of a preferred embodiment of the centring drum according to the present invention;

Figure 2 shows a substantially axial section of the  
20 Figure 1 centring drum;

Figure 3 shows an exploded view in perspective of a detail in Figures 1 and 2.

BEST MODE FOR CARRYING OUT THE INVENTION

Number 1 in the accompanying drawings indicates as  
25 a whole a substantially cylindrical centring drum mounted for rotation about a respective longitudinal axis 2, and which provides for receiving two side by side rows 3 and 4 of double filters 5 - which rows are located on opposite sides of a substantially central

## CLAIMS

1) A centring drum for filter assembly machines, the centring drum (1) comprising:

5 a substantially cylindrical shell (7) having a longitudinal axis (2) and a transverse reference plane (T), and rotating about said longitudinal axis (2);

a succession of seats (12) formed, parallel to said longitudinal axis (2), on the outside of said shell (7)  
10 and equally spaced about said longitudinal axis (2); wherein each said seat (12) receives a respective filter portion (5), and at least some of said filter portions (5) are offset laterally, along the relative said seats (12), with respect to said reference plane (T); and

15 centring means (28) which act on each laterally offset filter portion (5) to centre it, along the relative seat (12), with respect to said reference plane (T); wherein the centring means (28) are fitted to said shell (7) to rotate with the shell (7) about said  
20 longitudinal axis (2), and comprise, for each said seat (12), a stop member (40) located on a respective side of said reference plane (T) to define a centred position of the relative said filter portion (5), and push means (29) for moving the relative said filter portion (5)  
25 axially onto the relative said stop member (40);

the centring drum is **characterized in that** the stop members (40) define a first and a second succession (41, 42) of stop members (40), which successions (41, 42) are located on opposite sides of said reference plane (T)

and are intercalated so as if one seat (12) is engaged by a stop member (40) of a succession (41; 42), the two adjacent seats (12) are engaged by two stop members (40) of the other succession (42; 41); and adjusting means  
5 (31) are provided to move said two successions (41, 42) equally and oppositely along said longitudinal axis (2).

2) A drum as claimed in Claim 1, wherein said push means (29) are pneumatic means.

3) A drum as claimed in Claim 1 or 2, wherein said  
10 push means (29) are suction means which come out inside the relative said seat (12), on the same side of said reference plane (T) as the relative said stop member (40).

4) A drum as claimed in any one of Claims 1 to 3,  
15 wherein each said stop member (40) comprises a finger (40) housed in axially sliding manner inside the relative said seat (12), and having an end surface (43) facing said reference plane (T) and defining a stop surface for the relative said filter portion (5).

20 5) A drum as claimed in Claim 4, wherein said push means (29) are suction means which come out inside the relative said seat (12) at said end surface (43).

6) A drum as claimed in Claim 5, wherein said push means (29) comprise a suction hole (37) which comes out  
25 inside the relative said seat (12), beneath the relative said finger (40); and a groove (44) formed along said finger (40), communicating with the relative said suction hole (37), and terminating at said end surface (43).

7) A drum as claimed in one of the foregoing Claims, wherein the stop members (40) in each said succession are integral with one another.

8) A drum as claimed in Claims 4 and 7, wherein  
5 said first and said second succession (41, 42) respectively comprise a first and a second annular body (38, 39) which are coaxial with said longitudinal axis (2), are located axially outwards of said seats (12) and on opposite sides of said reference plane (T), and  
10 connect the relative said fingers (40) to one another; said first and said second annular body (38, 39) being movable axially with respect to said shell (7), and being fitted to said adjusting means (31).

9) A drum as claimed in Claim 8, wherein said  
15 adjusting means (31) comprise at least one first screw-nut screw coupling (52), in turn comprising a screw (50) extending parallel to said longitudinal axis (2), and a nut screw (51) formed through said first annular body (38); at least one second screw-nut screw coupling (58)  
20 operating in the opposite direction to said first screw-nut screw coupling (52), and in turn comprising a screw (56) extending parallel to said longitudinal axis (2), and a nut screw (57) formed through said second annular body (39); and a ring gear (47) coaxial with said shell  
25 (7) and mounted to rotate, with respect to said shell (7), about said longitudinal axis (2); each said screw (50; 56) being fitted integrally with a relative pinion (48; 49); each said pinion (48; 49) meshing with said ring gear (47); and actuating means (59) being provided

to impart to said ring gear (47) a given, adjustable rotation about said longitudinal axis (2).

10) A drum as claimed in any one of Claims 1 to 9,  
wherein said filter portions (5) define a double filter  
5 (5) for cigarettes.